THE LUFTWAFFE PROFILE SERIES NO.8

ARADO Ar 240

Gerhard Lang

A SCHIFFER MILITARY HISTORY BOOK

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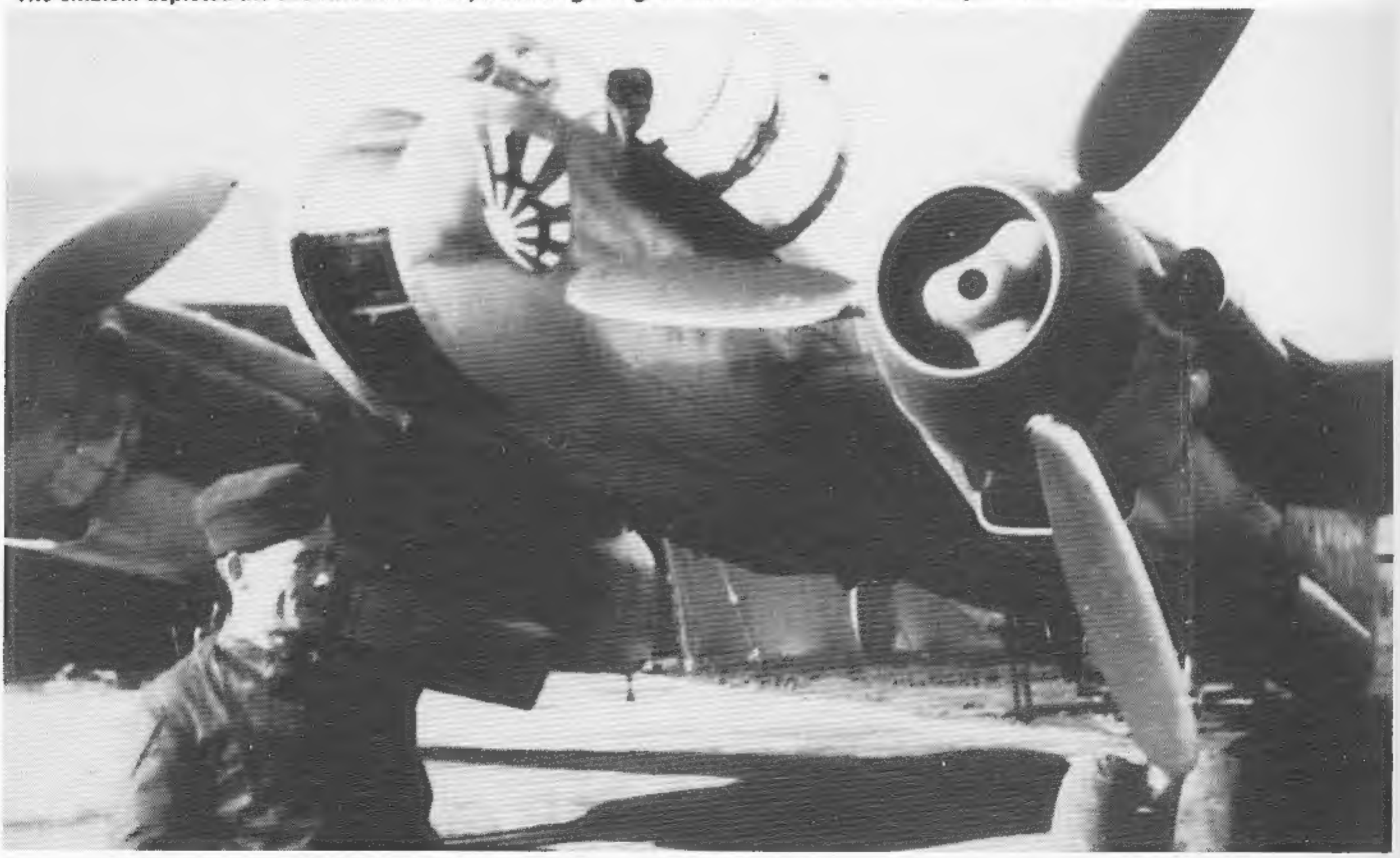
Schiffer Military/Aviation History

An Arado Ar 240 A in service with 3/(F)Ob.d.L. Clearly visible on the nose of the aircraft is the Staffel emblem; it has often been misidentified as it beare a striking similarity to the emblem of JG 5.

The Arado Ar 240 A-10 with 3/(F)Ob.d.L. in the Kharkov area at the end of 1942. The Staffel emblem was designed by the unit chaplain. The emblem depicted the two ravens of Odin; according to legend their arrival was followed by death and terror.



Arado Ar 240

By

Gerhard Lang

This photo shows an Ar 240 A during takeoff.

The Arado 240 (project designation E-240) was the result of a specification issued by the Reichsluftfahrtministerium (State Ministry of Aviation). Blueprints of this combat aircraft were submitted to the RLM at the end of 1938. On April 2, 1939 Arado received a contract to build three prototypes.

Development work began under the leadership of Professor Walter Blume and Dipl.-Ing. Wilhelm van Nes. At the same time, work was under way at Messerschmitt on the Me 210, which was designed for the same roles as the Ar 240.

Even before the Arado 240 V1 took off on its maiden flight the contract was increased to ten prototypes and an undetermined number of pre-production aircraft.

Major difficulties that developed with the first two prototypes were attributable to engine overheating, however these problems were solved through modifying the engine cowlings and installing additional oil coolers beneath the engine gondolas. Further major modifications affected the fuselage, requiring an extension of the cockpit into the nose area. The reason for this was the aircraft's instability about all three axes, which made it difficult to fly. All of these changes were incorporated into the Ar 240 V3 and subsequent aircraft. The aircraft's remotely-controlled defensive armament also gave problems and had to be reworked several times. Fundamentally, the Arado 240 was not a bad design; however, as the objective was maximum performance, there were serious problems in development and production. The aircraft's designers often reached the limit of what was possible in their efforts to achieve this objective with the means and technology available. The Ar 240 series was probably ready for production in 1941, however delays continued and it was canceled by the RLM in December 1942 after most of the jigs and materials were on hand. Existing aircraft were subsequently handed over to various Luftwaffe units.

The first jet aircraft were by now flying, and continuation of development work on the Ar 240 was out of the question. The Ar 240 thus progressed no further than the prototype stage. The highest known Werknummer is 240018. Whether that many aircraft were in fact built and flown is questionable. Surviving flight reports mention only the prototypes V1 to V8 and V10 and from the A-Series the A-01 to A-04. It remains to be determined which aircraft were assigned Werknummern 240009 and 240010, which also appear in the log books. Another question concerns the Ar 240 V5 and V6. Existing literature states that the V5 and the A-01 were the same aircraft, as were the V6 and the A-02. This claim seems to be very questionable, and it is more likely that four different aircraft are involved. The Arado Ar 240 V6 with the code T5+KH appears in one log book entry (from June 1942). In a well-known photograph of aircraft GL+QB, the legend Ar 240 A-02 is clearly visible on both engine cowlings, which suggests that this code did not belong to the V6. This would suggest–but not prove–that the code GL+QA belonged to the Ar 240 A-01. This means then that the code of the Ar 240 V5 is still unknown. Perhaps the Ar 240 illustrated in this volume wearing the code ??+YP is in fact the V5 and not the A-01 as is sometimes suggested. It appears that there is still a large question mark beside the identities of the Ar 240 V5 and the Ar 240 A-01.

Technical Description

The Arado Ar 240 was a twin-engined, mid-wing monoplane with twin fins and rudders and a retractable tailwheel undercarriage. The fuselage had an oval cross-section which became circular aft of the rear weapons stations. A dive brake was incorporated into the fuselage tail, consisting of four petals similar to that of the Do 217. the fuselage was a stressed-skin, monocoque structure.

The wing center-section was rectangular, the outer wing sections trapezoidal with unswept leading edges. The wing was a two-spar structure consisting of a one-piece center-section and two outer sections. Fowler flaps were installed

The first prototype, the Ar 240 V1. Note the location of the cockpit over the wing center-section.

along the entire trailing edge (center-section and outer wings) in order to provide the required lift during takeoff and landing. One innovation was the integration of the outer Fowler flaps with the ailerons. This system was tested on an Arado 198 and a patent application was submitted.

The first two prototypes were also equipped with automatic leading edge slots; these were dropped from subsequent aircraft, however, as they offered no apparent advantage in low-speed flight. The fuel tanks were installed in the wings, four on each side, with a total capacity of 2,300 liters.

The crew consisted of pilot and radio operator-rear gunner, who sat back to back. The cockpit was pressurized and was an integral part of the fuselage structure. It was covered by a double-pane, jettisonable, clear-view canopy with hot-air heating. In the first two aircraft, the V1 and V2, the crew sat directly over the wing center-section. Beginning with the V3, however, the cockpit was moved forward, ahead of the wing. Approximately one-third of the width of the fuselage nose was glazed. The horizontal stabilizer sat on top of the fuselage with twin cantilever end plate fin and rudders. The elevators and rudders were completely mass-balanced.

Two mainwheels were mounted on each main undercarriage member. The main undercarriage retracted rearward into the engine gondolas. The tailwheel was also retractable.

Several types of engine were tested. The Arado Ar 240 V1 and V2 were each powered by two Daimler-Benz DB 601 A in-line engines, the V4 by two DB 603 A motors each producing 1750 H.P. The Ar 240 A-03 was fitted with two BMW 601 TJ engines. Cooling of the Daimler-Benz engines was provided by annular radiators. It should be noted that the various engines used by the aircraft were changed several times.

Provision was made for the carriage of two bombs of up to 1,000 kilograms beneath the fuselage. Further attachment points beneath the wings for bombs and drop tanks were planned.

At the request of the RLM, the aircraft's design had to include a remotely-controlled defensive armament. Control of the weapons was hydraulic and they were aimed by means of a periscope sight. The FA-4 remote control system was developed by Rheinmetall-Borsig. Both the V1 and V2 flew without the rearward-firing armament as development of the remote control system was still incomplete when they were ready to fly.

Description of Aircraft
Arado Ar 240 V1

The maiden flight of the V1 (WNr. 240001, DD+Q1) took place on May 10, 1940. Some modification work must have been done between then and June 25, because a first maintenance flight is recorded in a flight log that day. A flight as part of manufacturer's trials took place on

Cover artwork by Steve Ferguson.

Translated from the German by David Johnston.

Printed in China.
ISBN: 0-88740-923-7

This book was originally published under the title,
Flugzeug Profile Arado Ar 240

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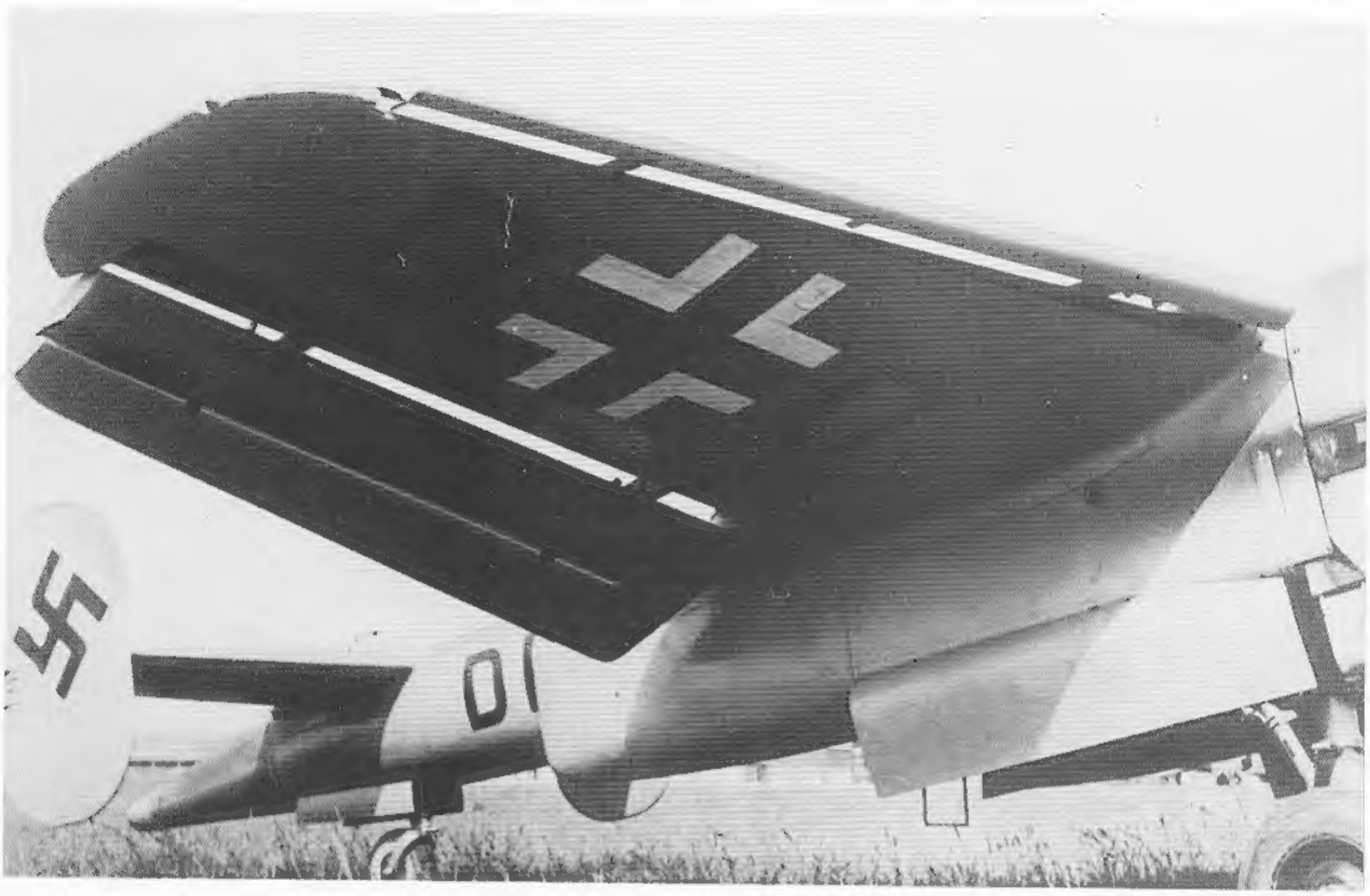


High-lift devices of the Ar 240 V1, leading edge slats and Fowler flaps, which were combined with the ailerons in the outer wings.

July 17, 1940, followed by an engine performance test flight on July 24. The aircraft was powered by two DB 601 A engines each producing 1,175 H.P. No armament was installed.

According to various C-Amt progress reports, the V1 remained in manufacturer's trials until approximately February 1941 with two DB 601s. New engines (DB 603 E) were installed in May and airframe testing continued until July 1941. There is no mention of the V1 after October 1941.

The V1 had a wingspan of 14.3 meters, a length of 11.8 meters. Empty weight was 5,200 kilograms, gross weight 8,000 kilograms.

Arado Ar 240 V2

Nothing is known of the code or date of the first flight of this aircraft, Werknummer 240002. Many publications give the code DD+CE for the V2. A C-Amt report dated September 1, 1940 indicates that the aircraft was engaged in manufacturer's trials at that time. The V2 was flown from the Arado airfield to Rechlin at the end of February 1941, where acceptance trials for series production were to be carried out. Between that date and May 1941 the aircraft's engines were changed from DB 601s to DB 603 Es. This may have been the reason for the maintenance test flight on April 6, 1941. Engine and weapons tests were carried out from May 1941 until February 1942. Armament consisted of two MG 17s and two MG 151s. Preliminary dive-bombing trials were concluded in November 1941, after which new ailerons were installed. Resumption of flight operations was planned for the beginning of December 1941.

According to the November 1941 monthly report submitted by the RLM's inspectors at Arado, the V2 was now equipped with two DB 601 E motors. There is no mention of the V2 in surviving later reports. Dimensions were similar to the V1, however weights had climbed; empty weight was 5,425 kilograms and gross weight 8,190 kilograms.

Arado Ar 240 V3

Code KK+CD, Werknummer 240003. The first known flight, a maintenance test flight, occurred on May 9, 1941. The V3 began service trials, in which role it carried out reconnaissance flights over England. Beginning with the V3 the cockpit was moved forward into the nose of the aircraft. The dive brake in the tail section was replaced by a tail cone with ventral fin. There are various descriptions of the initial engine equipment. One lists 1,175-H.P. DB 601 A power plants, while a C-Amt report states that manufacturer's trials were proceeding with Jumo 213s. Yet another report states that the aircraft was re-engined with DB 601 E power plants prior to February 1941, which agrees with the BAL monthly report from November 1941. The same document also reveals that the V3 was engaged in pressure cabin tests at that time. General flight testing continued until February 1942.

The leading edge slots were deleted. Arado and the Deutsche Versuchsanstalt für Luftfahrt e. V. (DVL, German Aviation Research Institute) had together developed a new remote-control system, the FA-9, for the rearward-firing armament (FDL-131Z), and this was first installed in the V3. The FA-13 was later substituted for the FA-9, but this later version was not entirely satisfactory either.

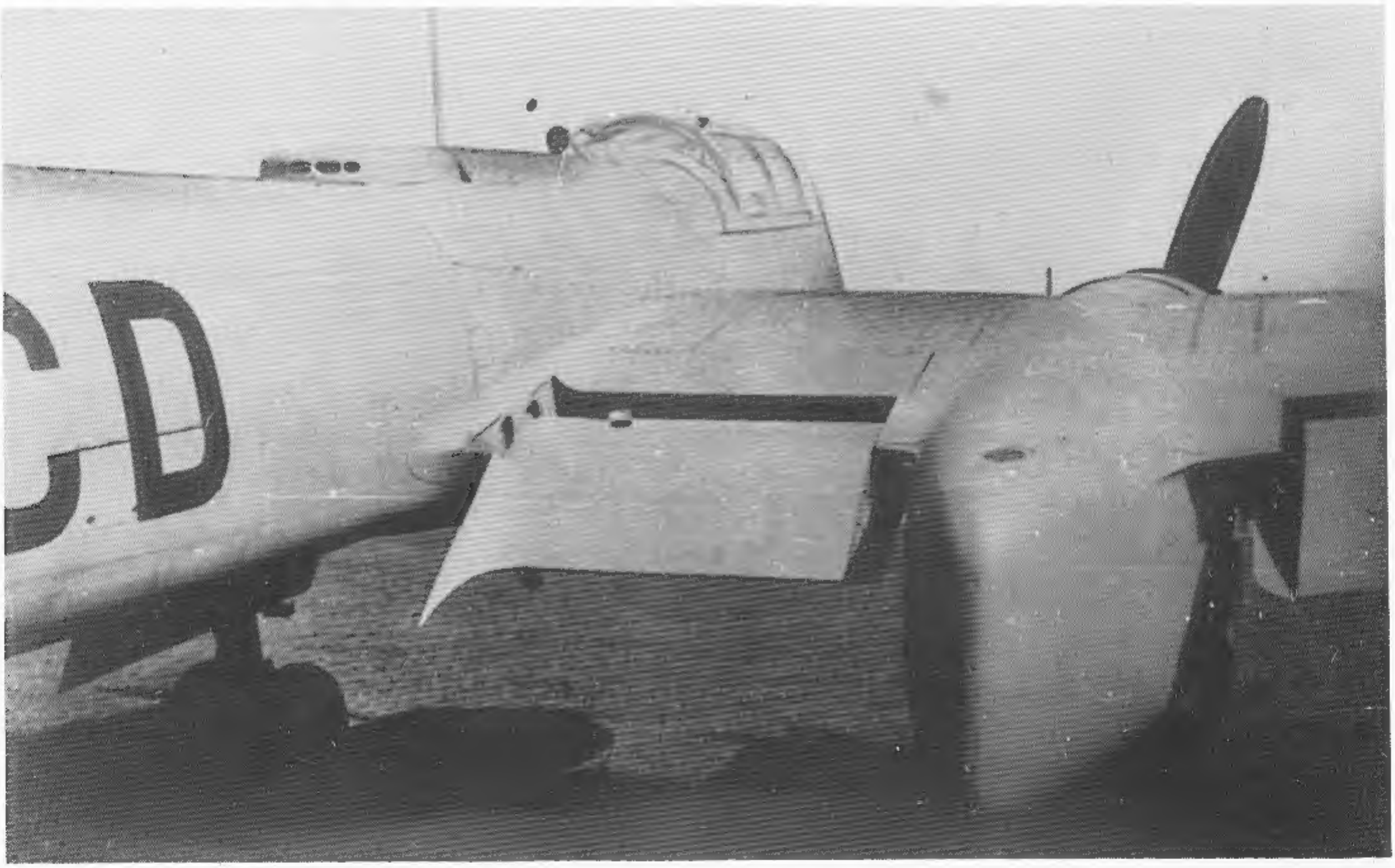
The last test flight by the V3 is believed to have taken place at Alt-Lönnewitz on April 18, 1944.

While the wingspan remained unchanged, the length of the V# was increased to 12.38 meters. There was a further increase in empty weight to 5,970 kilograms.

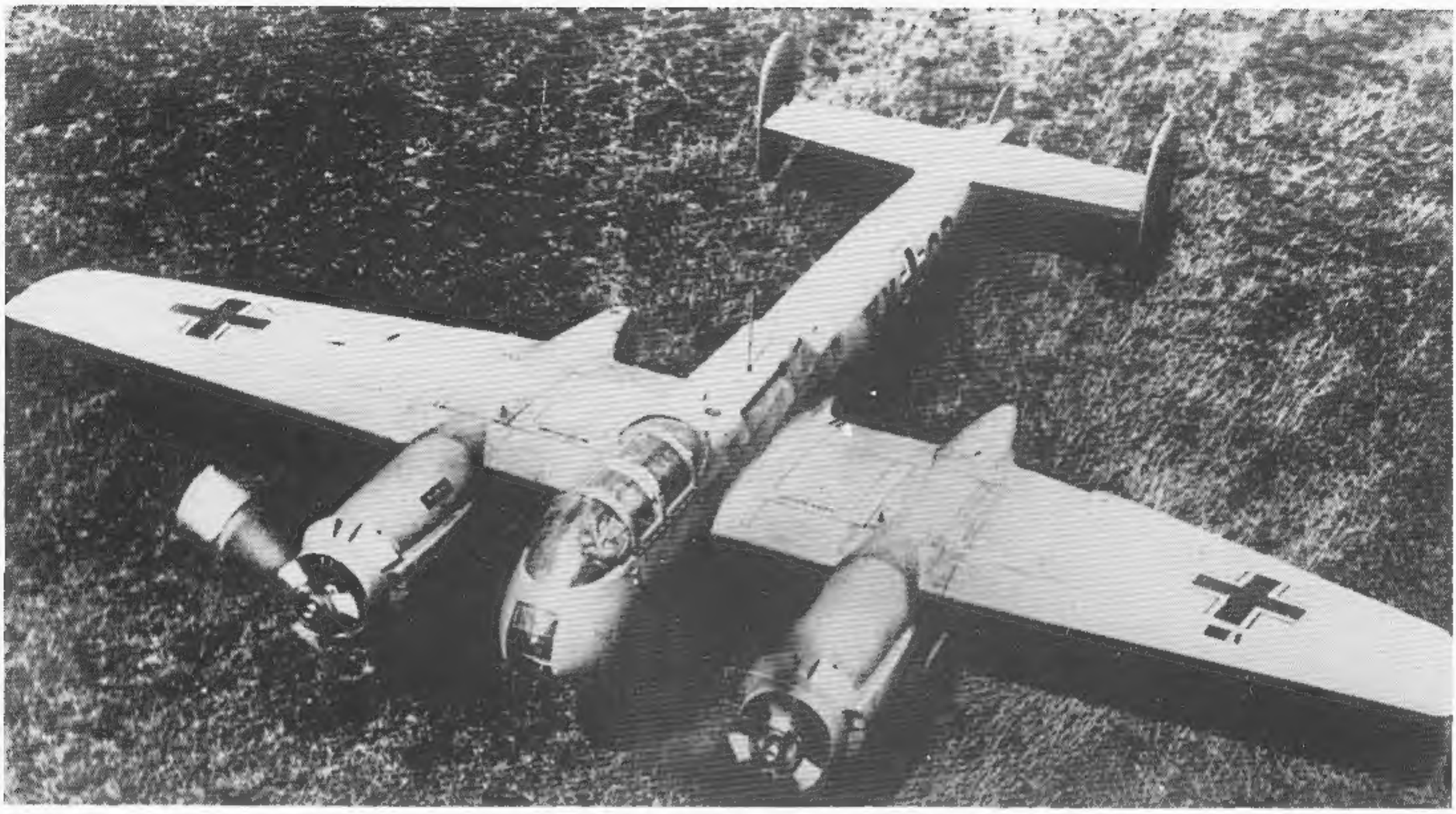
Arado Ar 240 V4

The V4 was the prototype of a dive-bomber version of the Ar 240. The first maintenance test flight by the V4

Diagonal front view of the Arado Ar 240 V3.



Rear view of the Ar 240 V3 with the code KK+CD. The aft-firing barbettes have not yet been equipped with machine-guns.



The Arado Ar 240 V3 before takeoff.

(Werknummer 240004), which is confirmed by a log book entry, took place on June 19, 1941. The aircraft was equipped with a dive brake and could carry eight 50-kg bombs beneath the fuselage. Power was provided by two 1,750-H.P. DB 603 A engines, marking the first time these were installed in the series. Service trials were carried out in France and the Mediterranean.

The V4 was first mentioned in a C-Amt report in February 1941, at which time the aircraft was undergoing manufacturer's trials with DB 601 E engines. The May report made mention of the conversion to DB 603 E engines. The last time the Ar 240 V4 appears in the surviving records is October 1941.

The fuselage of the V4 was lengthened to 13.05 meters.

Arado Ar 240 V5

The maiden flight of the V5 took place on September 11, 1941. The aircraft (Werknummer 240005) was assigned the code GL+QA (?). It was built by AGO Flugzeugwerken in Oschersleben.

Power plants were two DB 601 E engines each producing 1,175 H.P. Like the V3, the V5 was built with a tail cone instead of a dive brake. Armament consisted of two MG 17 machine-guns located in the wing roots and two remotely-controlled MG 81 Z barbettes above and beneath the fuselage. The barbettes were controlled by the improved FA-13 system, which had previously been tested in a Bf 110 C-1 (BA+CP).

The planned testing of the aircraft at Rechlin was canceled. Instead the V5 underwent a series of performance flights under the eye of the BAL in Brandenburg.

It appears that all of the Ar 240 prototypes (V1 to V6) were re-engined with the DB 603 E in the period February-May 1941. It was engaged in general flight testing until at least February 1942.

On March 25, 1942 the aircraft was flown to Oranienburg and handed over tothe Aufklärungsgruppe Oberbefehlshaber der Luftwaffe (Reconnaissance Group of the Commander in Chief of the Luftwaffe). The V5 was supposed to resume flying on October 15, 1942 after modification. Whether or not it was able to meet this deadline is unknown. Following subsequent adjustment and acceptance flights the aircraft was delivered to the Research Station for High-altitude Flight.

Arado Ar 240 V6

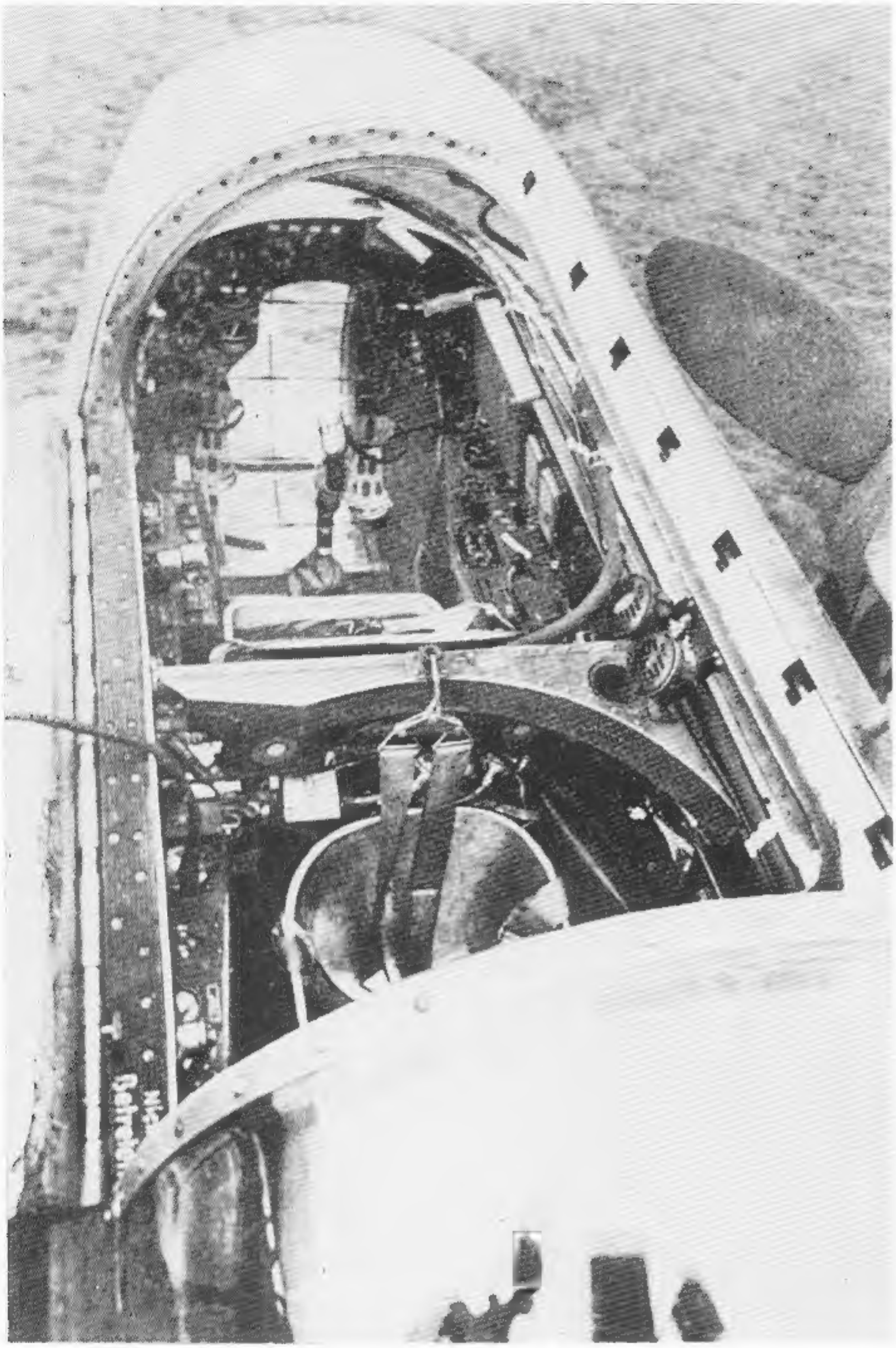
Like the V5, the V6 (GL+QB ?, Werknummer 240006) was also built by AGO. The aircraft was in final assembly in November 1941. Delivery for flight operations was planned for the end of December. The first maintenance test flight took place on January 18, 1942. Whether this was the aircraft's maiden flight or merely a maintenance test flight is uncertain. The Luftwaffe acceptance flight was carried out on March 4, 1942 and on March 6 the machine was ferried to Oranienburg. On June 6 there was a familiarization flight for the E-Stelle Rechlin test pilot. According to the test pilot's log book the aircraft wore the code T5+KH (!) at that time. Two calibration flights were carried out the same day. A further flight was made on June 7, 1942.

The V6 was equipped in a similar fashion to the V5. C-Amt reports on the V6 are identical to those of the V5. GL+QB was flown by 3/(F)100 in the Kharkov area in the winter of 1942/43.

Arado Ar 240 V7

The minutes of an Arado company conference on September 5, 1942 reveal that delivery of the V7 and V8 would take place on schedule. It is believed that the Ar 240 V7 (Werknummer 240007) first flew in October 1942. It wore the code DM+ZU. The V7 served as the prototype for the Ar 240 B, a planned high-altitude reconnaissance version. The pressurized cockpit consisted of two hemispheres with double glazing and heating between the layers of plexiglass. This pressurized cockpit was developed specially for the Ar 240 and was a stress-bearing element of the fuselage structure.

Power plants consisted of two DB 605 A engines, both producing 1,475 H.P.



The cockpit of the Ar 240.

The use of methanol-water injection (MW-50) increased engine output to 1,800 H.P. Armament consisted of two MG 17s in the wing roots and a revolving turret on the fuselage under side with a MG 151/20. Two 50-kilogram bombs could also be carried. Weapons functioning trials were carried out on January 21, 1943.

The empty weight of the V7 reached 6,960 kilograms, gross weight 8,890 kilograms. Range was 1,900 kilometers, time to climb to 6,000 meters was 10 minutes 6 seconds.

Arado Ar 240 V8

Werknummer 240008. Probable first flight in December 1942. Equipped like then V7.

Arado Ar 2404

Werknummer 240009. Nothing is known about this machine apart from the fact that it made a calibration flight on December 11, 1943.

Arado Ar 240

Werknummer 240010. The same applies to this aircraft. An adjustment flight took place on January 8, 1943. That year it went to 1/(F)100 based at Orsha-South in Russia and on August 3, 1943 made a forced landing on account of mechanical problems. The damaged was listed at 15%.

Arado Ar 240 V9 (Ar 240 C-01)

This was the prototype for the Zerstörer (destroyer, or heavy fighter) version, the Ar 240 C. It differed in having a lengthened wing (16.6 meters) and fuselage (13.34 meters), as well as longer engine cowlings accommodating two DB 603 A engines with water-methanol injection.

Forward-firing armament consisted of four MG 151 20mm cannon. Both aft weapons barbettes were equipped with two MG 151/20 cannon.

In the minutes of a September 5, 1942 conference it says: "The machine must get into the air as quickly as possible for handling tests and performance measurements regardless of equipment." There were several problems associated with construction of this machine, as a number of items of equipment were not available.

The modifications introduced by the V9 raised empty weight to 8,480 kilograms and gross weight to 10,550 kilograms.

Whether the V9 ever flew is questionable, as it appears in none of the surviving equipment lists or reports. Some publications do offer a date of March 1943 for the initiation of flight testing.

Arado Ar 240 V10 (Ar 240 C-02)

The V10 was planned as a night fighter. Power was provided by two Junkers Jumo 213 engines. The aircraft, Werknummer 240018, was assigned the code BO+RC. A test flight was made on September 27, 1943. According to a C-Amt report dated April 24, 1944, general flight testing and engine trials were carried out at that time. Further test flights were made from Brandenburg in June 1944.

Arado Ar 240 V11 (Ar 240 C-03)

The Ar 240 V11 was supposed to be the prototype for a Kampfzerstörer (heavy fighter-bomber) version. Installation of a GM-1 system was planned for the engines.

The aircraft was supposed to receive the equipment required for a heavy fighter-bomber, however all work not absolutely necessary to the evaluation of the heavy fighter-bomber had to be postponed. The prototype's weight is given as 11,200 kilograms; target weight of the production version was 11,000 kilograms. The V11 was built with a new cockpit planned for the Ar 240 F, but without armor and pressurization equipment.

There were changes to the fuselage center-section as a result of the modified weapons installation; ammunition was

Arado Ar 240 A-02 (GL+QB) in Kharkov, early 1943.

moved to the wing center-section and the size of the magazines was increased.

Changes to the wing center-section were necessary on account of the installation of MK 103 and MK 104 cannon, transfer of magazines to the fuselage and the installation of oxygen cooling equipment.

Contrary to the results of the May 1942 conference, in September 1942 it was decided to install a semi-fixed ribbon brake chute in the tail of the V11 instead of a tail cone with stabilizing fins (if available). The tail unit adopted by the V11 and V12 was also to be installed on the C-Version. A second tail unit with a larger horizontal stabilizer (7.2 m² instead of 6.4 m²) was made ready for flight testing. The Ar 240 A-03 was supposed to determine whether the desired larger surface area could be better achieved through the use of a horizontal stabilizer with increased span or through an increase in chord. The vertical stabilizers remained unchanged.

In September 1942 no information was as yet available concerning the planned DB 603 engines; consequently the designers were unable to finalize the engine-airframe arrangement, the configuration of the engine gondolas and the gondola attachments on the inner wing.

The cockpit was largely identical to that of the V9, however the arrangement of equipment was chosen for best visibility. The radio installation likewise had to be reworked. The installation of an aft-firing weapon in the starboard engine nacelle made it necessary to move the antenna tuning equipment from the engine gondola to the fuselage.

Planned fixed forward-firing armament consisted of two MG 151s in the fuselage and MK 103 or MK 104 cannon in the wing roots. These weapons were a requirement for the close-support and heavy fighter roles. Defensive armament of both the V11 and V12 included a fixed, rearward-firing MG 151 in the starboard engine nacelle. This supplemented the flexible rearward-firing armament of two MG 131Z machine-guns in the barbettes.

The V11 was required to be able to carry standard loads of 50, 500 and 1,000 kilograms, as well as a maximum load of 1,800 kg.

Like the V9, the V11 and V12 appeared regularly in conference minutes but were never mentioned in the flight reports.

Arado Ar 240 V12 (Ar 240 C-04)

The V12 was similar in design to the V11, however its cockpit was fully pressurized and it was equipped with armor and rear-view sight.

Arado Ar 240 V13

The V13 was to have been the prototype for the Ar 240 D equipped with two 2,020 H.P. DB 614 engines with three-stage superchargers. The aircraft had a planned wingspan of 16.60 meters, a length of 13.34 meters and a gross weight of 10,600 kilograms.

It is not known if this prototype was built.

Arado ar 240 V14

It is also not known whether the V14 was built. Later it was to have formed the basis of the Ar 240 E. Projected power plants were two DB 627 engines, high-altitude versions of the DB 603 G.

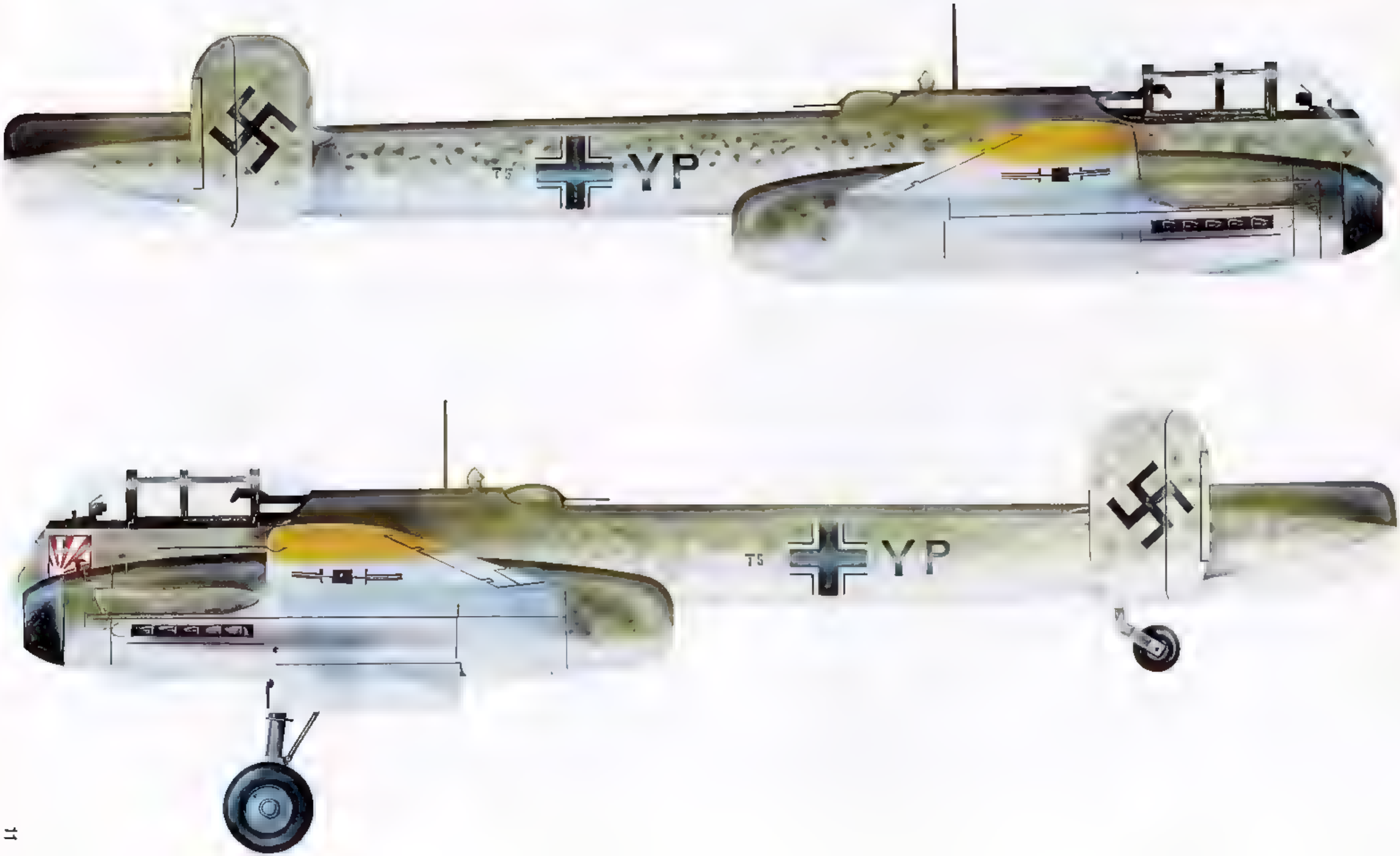
The following data were specified: wingspan 20.17 meters, length 14.07 meters, wing area 40.9 m², empty weight 9,000 kilograms, gross weight 14,200 kilograms, fuel capacity 2,700 liters, bombload 2,000 kilograms, cruising speed 580 kph, range 2,400 kilometers.

Arado Ar 240 V15

Construction of the V15 (Ar 240 C-02) is likewise unconfirmed. It is said to have been used as a reconnaissance aircraft over the Soviet Union. Planned armament consisted of two MG 151/20 cannon in a ventral tray. The aircraft was also to have been equipped with FuG 202 Lichtenstein radar.

Arado Ar 240 A-02. GL+QB also flew with 3/(F)Ob.d.L. in Kharkov in 1943.

GL+QB once again, photographed during trials in Russia in the winter of 1942/43.



The color drawings depict the Arado Ar 240 A T5+YP of 3/(F)Ob.d.L. As no color photos of the Arado Ar 240 have been found, the finish shown in our drawings is based on black and white photos.
It is quite possible that the finish depicted is not the authentic scheme worn by the aircraft.

Staffel emblem of 3/(F)Ob.d.L.

This Ar 240, probably T9+GL of 3/Erpr.Gr.Ob.d.L., was equipped with four-blade propellers. Photographed at Oranienburg in March 1944.

Operating from Paris-Orly, T9+GL flew high-altitude sorties over England on February 1, 1944. Several flights in the Corsica area followed in March 1944. The aircraft returned to Oranienburg on March 24, 1944. Further test flights were carried out there and that is where this photo was taken. The aircraft's last flight from Oranienburg took place in June 1944. T9+GL was destroyed in a crash-landing in Poland in the autumn of the same year.

Maintenance on T9+GL at Oranienburg in March 1944.

A group photo of Erprobungsgruppe ground staff taken at Oranienburg in March 1944. The aircraft is probably T9+GL.

??+YP during pre-takeoff preparations at Kharkov.

Arado Ar 240 A-0

The Arado Ar 240 A was a fast multi-purpose combat aircraft that was to have been built in a number of versions for various roles, including those of heavy fighter, night fighter, dive bomber and high-altitude reconnaissance aircraft.

The production aircraft was to have been powered by two DB 603 A-1 engines driving VDM four-blade metal propellers with a diameter of 3.4 meters. The DB 603 A-1 was a liquid-cooled, twelve-cylinder inverted-vee engine with fuel injection and offered 1,750 H.P. for takeoff.

Radio equipment consisted of an FuG 15 with homing apparatus, an FuG X short wave set and an FuG 25a IFF set. An FuNG 101 was planned for night operations.

Armament varied according to the aircraft's role. The following armament choices were available·

Forward-firing armament: two MG 151/20 cannon in the fuselage floor each with 300 rounds, as well as two MG 151/20 in the wing roots, also with 300 rounds per gun. Two additional MG 151/20 cannon could be installed in a removable ventral tray for the heavy fighter role. Two defensive barbettes mounting MG 131Z machine-guns were fitted above and below the fuselage. Both barbettes of the FA-13 system were controlled together by means of an aiming periscope.

There were also four bomb loading options:

(1) 1 X 1,000 or 1,800 kg bomb
(2) 2 X 500 kg bombs
(3) 8 X 50 kg bombs
(4) 288 X 2.5 kg incendiary and fragmentation bombs.

Further data for the Ar 240 A-0 were:

Wingspan:	14.34 m
Length:	12.81 m
Height:	3.96 m
Empty Weight:	6,350 kg
Gross Weight:	10,500 kg

Maximum speed at 6,000 meters:
668 kph
Cruising speed at 6,000 meters:
598 kph
Time to climb to 6,000 meters:
9.7 min
Service ceiling with bombs:
9,500 m
Service ceiling (reconnaissance version): 10,200 m
Service ceiling (absolute): 11,500 m
Range: 2,200 km

Arado Ar 240 A-01

The Ar 240 A-01 (GL+QA ?, Werknummer 240011) carried out a maintenance test flight on June 28, 1942, as confirmed by a log book entry. According to Arado minutes of September 5, 1942 it was still in manufacturer's trials at the end of September and an armed test flight remained to be to carried out. Subsequently the engines were changed and the aircraft was prepared for delivery to the Luftwaffe. On September 20, 1942 the A-01 was ferried to Rechlin, where an autopilot acceptance flight was to be carried out. After this acceptance flight it went to Tarnewitz for weapons tests. At the same time a crew from the High Altitude Research Station was familiarized with the aircraft. Following weapons testing the A-01 went directly into front-line service. It may have been at this time that the A-01 wore the code ??+YP. The complete code may have been T5+YP, the first two characters indicating the Reconnaissance Group of the Commander in Chief of the Luftwaffe There was a maintenance test flight on June 28, 1942. The aircraft entered service with 3/(F)100 in the Kharkov area at the end of 1942. On February 16, 1943 the A-01 crashed at Poltava/Sechinskaya as a result of mechanical trouble. Both Hauptmann Bergen and Oberfeldwebel Heinz Felleckner lost their lives in the crash.

Arado Ar 240 A-02

The second aircraft of the A-Series was the Ar 240 A-02 (GL+QB,

Arado Ar 240 A-01 of 3/(F)Ob.d.L. wearing the code ??+YP. Photo taken at Kharkov in 1943.

Another photograph of ??+YP. Hauptmann Bergen and Oberfeldwebel Felleckner crashed and were killed in this aircraft.

T5+MH following a belly landing.

Werknummer 240012). Installation of weapons was completed on September 5, 1942. It was planned to have the aircraft ready to fly by September 20 and only adjustment and acceptance flights were anticipated.

A test flight took place on September 13, 1943. WNr. 240012 made a crash-landing on January 24, 1943 while in the hands of the VfH and sustained 25% damage.

Arado Ar 240 A-03

The Ar 240 A-03 (Werknummer 240013) bore the code DI+CY. After the V1 it was the first Ar 240 to have four-blade propellers. Power was provided by two DB 601 E engines. It is believed that two BMW 801 TJ twin-row radial engines with Rateau turbo-superchargers were installed at a later date. Unlike other Ar 240s, the observer sat facing forward

The previously quoted minutes from September 5, 1942 reveal that the A-3 possessed better longitudinal stability and handled better in turns than the A-01. Behavior about the vertical axis was the same. At that time the aircraft was in the hangar, where a stronger tailwheel fork and wiring for engine instrumentation was installed. Repairs were also required to the aft fuselage, which would suggest that the aircraft had been involved in an accident. All this work was supposed to be completed by September 14, after which further adjustment, handling and calibration flights were planned as well as test flights by the E-Stelle in relation to performance and handling. These flights were to continue until the A-04 was ready to fly and Arado had received set of modified DB 603 engines and the definitive propellers. As well as changing engines, the airframe was prepared for performance flights. That meant adding weapons fairings and cover panels and replacing the weapons and the periscope with mock-ups.

It is known that an adjustment flight was carried out on April 21, 1943. A log book of one of the E-Stelle test pilots shows that the A-03 was at the testing station at Rechlin from May 1943 until June 16, 1943. A calibration flight was flown there on May 18 by the A-03, then equipped with DB 603 engines. Following the installation of a GM-1 system, on June 5 the aircraft reached an altitude of 10,300 meters. The A-03 was flown from Rechlin to Brandenburg on June 16, 1943.

Flight testing ended at the beginning of July 1943 and the aircraft was assigned to 2/(F)122 in Italy for operational use.

The Ar 240 A-03 flew one mission before crashing (70% damage) and was subsequently not repaired. It is known that a crash-landing took place at Frosimone, south of Rome, where Werknummer 0013 was discovered by the Allies in a disassembled state. This crash-landing has also been attributed to the A-02, however this contradicts the log book entry showing a test flight by the A-02 on September 13, 1943. (See: Ar 240 A-02).

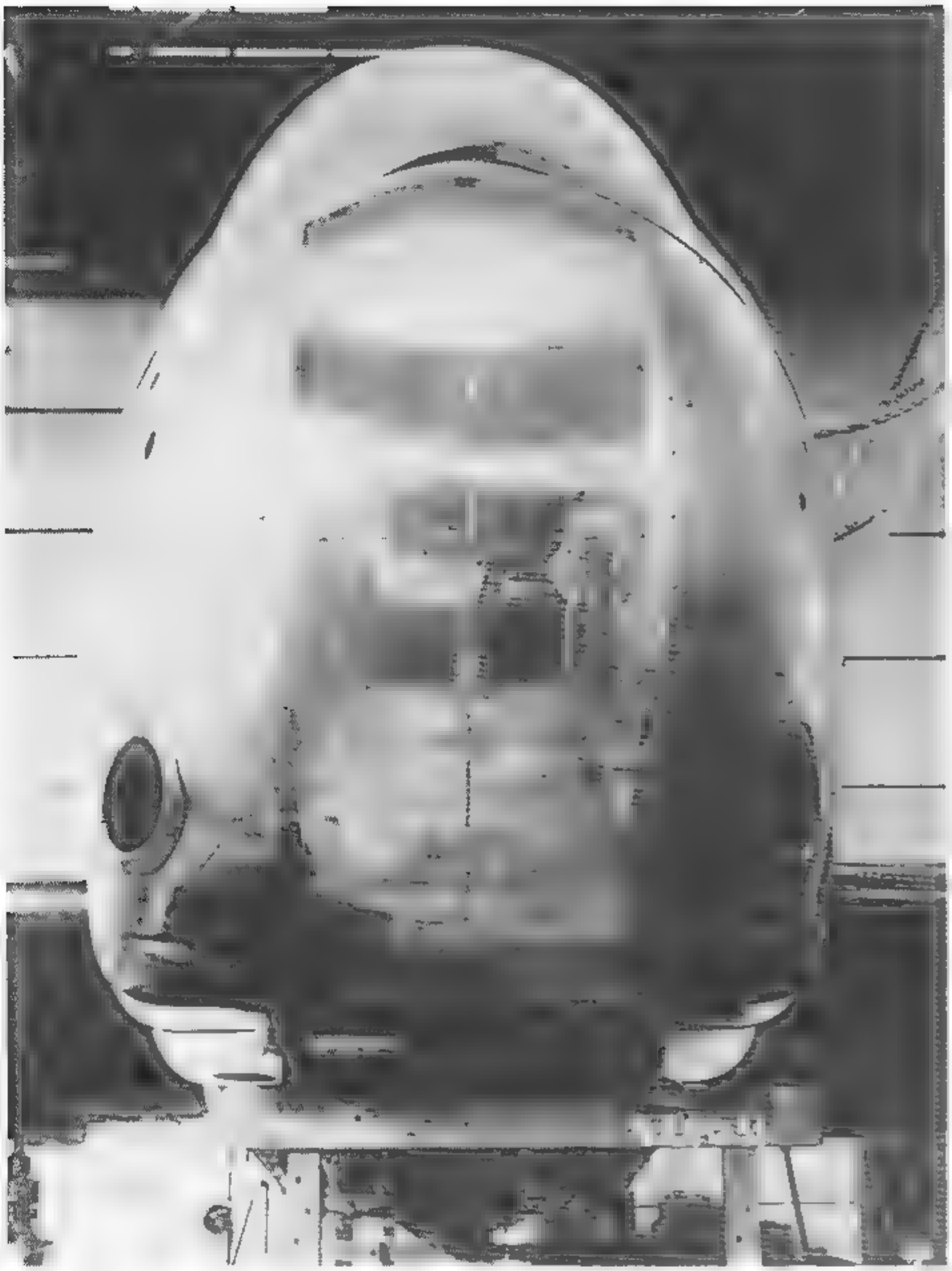
Arado Ar 240 A-04

The next aircraft in the series to be built was the Ar 240 A-04 (Werknummer 240014) which was coded DI+CZ. After various but necessary modifications it was ready to fly on September 20, 1942. DB 601 E engines were first installed, but these were later replaced by DB 603 power plants.

Adjustment flights were carried out pending delivery of the outer wings and tail assembly planned for the Ar 240 C, which the A-04 was supposed to test. The A-04 is known to have made two flights at this time, an adjustment flight on December 10, 1942 and a handling flight on January 15, 1943. After many of the problems associated with the development of remote-control systems had been overcome, the FA-12, which had been developed in cooperation with the Askania

Close-up of the undercarriage of T5+MH.

T5+MH during weapons trials at Tarnewitz. In the center of the photo is Dipl.-Ing. Lucht, to his right Dipl.-Ing. Klemm.



An entire series of photos was taken of the V3 during its construction, here a front view.

company, was released for service trials. The system was first installed, in the A-04, in September 1943.

In September or October the A-04 was sent to 2/(F)122, which was now based at Perugia north of Rome, as a replacement for the A-03, which had crashed. The A-04 was likewise heavily damaged in a crash resulting from engine trouble; makeshift repairs were carried out and the machine was ferried back to Arado.

Arado Ar 240 A-05

The Ar 240 A-05 had the Werknummer 240015. Flight tests were conducted at Rechlin and Stuttgart-Echterdingen. The aircraft was equipped with 1,880-H P. BMW 801 TJ twin-row radial engines with Rateau turbo-superchargers, other reports indicate that it was powered by two DB 603 A in-line engines, however. According to unconfirmed sources, the A-05 carried no armament and was flown in Russia by Aufklarungsgruppe 10 and the Reconnaissance Group of the Commander in Chief of the Luftwaffe (Aufl.Ob.d.L.).

Arado Ar 240 C

Production of a version of the Ar 240 for the special bomber role was discussed at a conference at Arado on March 10, 1942. This variant received the designation Ar 240 C. It was decided that the Ar 240 C should receive a new outer wing, increasing wingspan to 19 meters and wing area to 41 m². Larger tail surfaces were also seen as necessary. The fuselage was to remain unchanged initially. These changes were to be tested on two aircraft and the V9 and V11 were selected So far it has been impossible to determine which of the prototypes was used and whether or not these modifications were actually carried out.

Attention once again turned to dive brakes. Calculations were based on a dive angle of 50 degrees and a maximum G-force of 3.5 during pull-out. It appears that little confidence was placed in the effectiveness of the tail-mounted brake, as the installation of underwing dive brakes were planned as a modification kit. The first installation was to take place on the V11.

Installation of a Kutonase also required major design changes and this feature, too, was not anticipated until the V11. Installed in the leading edge of the wing, the Kutonase was a barrage balloon cable cutter.

The planned armor protection was likewise dispensed with, as it only offered protection from projectiles up to a caliber of 8 mm. Only the fuselage tail, which now was to accommodate an inflatable raft with automatic emergency transmitter instead of a dive brake, was to be provided with armor. Care was taken not to produce any changes in weight and center of gravity.

Provision was to be made for tropical equipment as well as a remotely-controlled flare pistol. Automatic resetting for the gun barbettes in the event of failure of the remote-control system was not considered necessary. It was assumed that the force of the slipstream would be sufficient to centralize the barbettes.

There were no plans to equip the prototypes as reconnaissance aircraft, although this remains to be clarified for the V11 and V12. However, this decision was overturned at another conference held on March 17, 1942. It was decided that the complete electrical system required for the reconnaissance role should be installed in the Ar 240 V9 to V12

Installation of additional fuel tanks in the engine gondolas proved impracticable, therefore provision was made for an external tank beneath the fuselage for increased range. Anticipated radio equipment was the FuG 16, with no installation of the FuG 25.

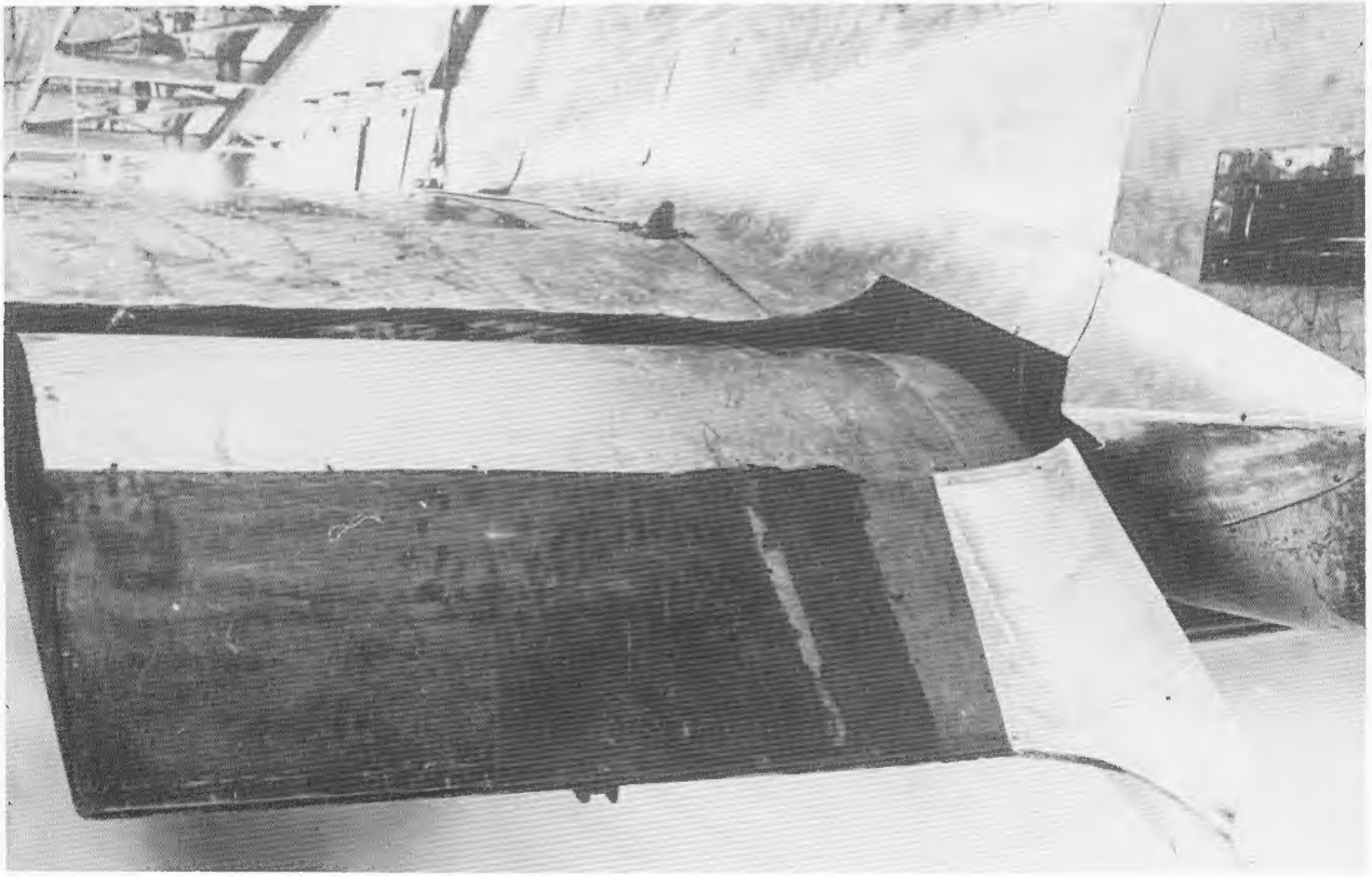
The following specification applies to the Ar 240 C:

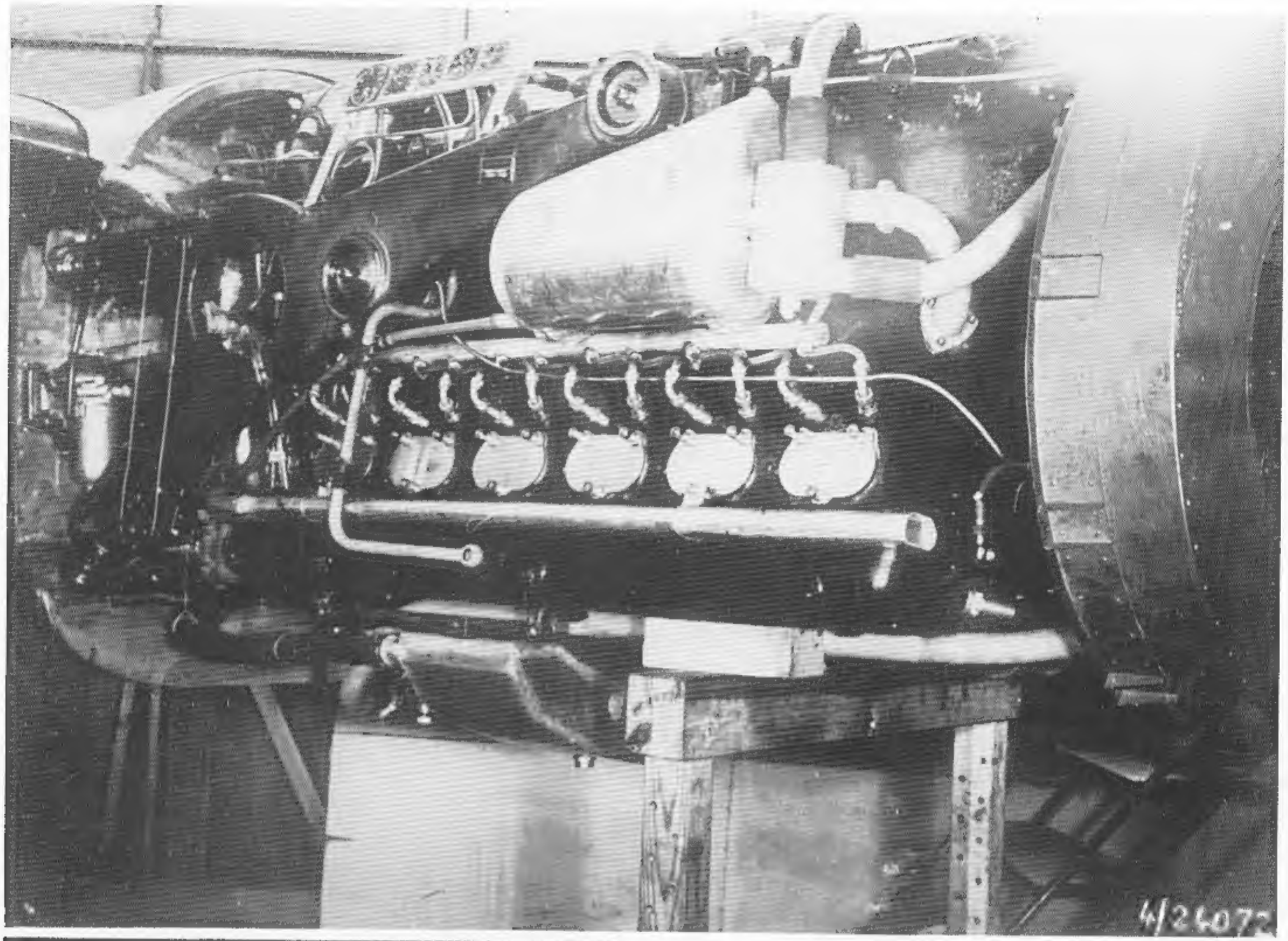
Armament: 2 fixed, forward-firing MG 151 each with 300 rounds. One MG 81Z with 500 rounds in each of two aft-facing barbettes above and beneath the fuse age,

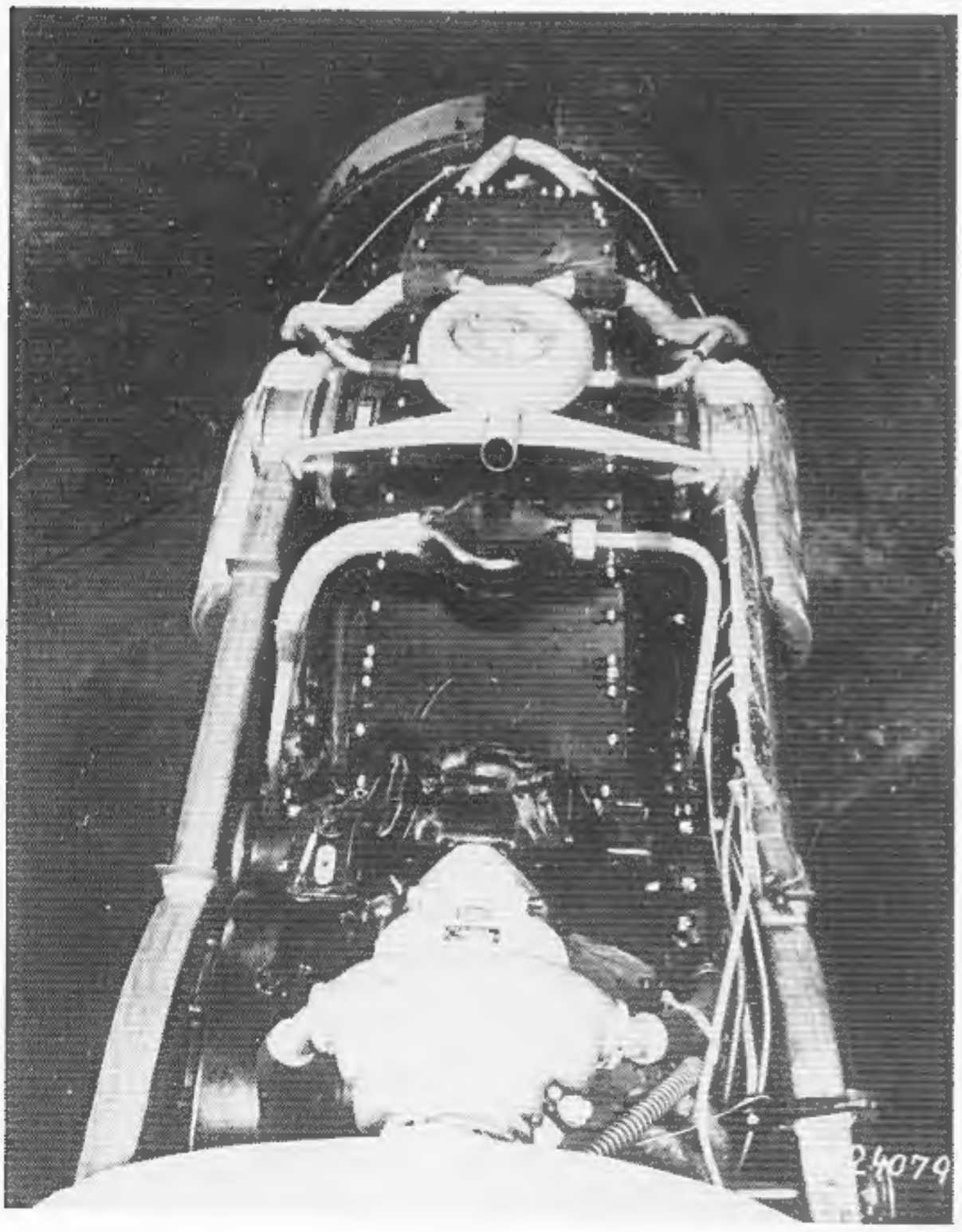
The cockpit of the V3 during construction.

Rear fuselage of the Ar 240 V3. The tail unit has yet to be installed.

Close-up of the wing center-section with lowered landing flap.







Top:

The engines have been installed. This photo proves that the V3 was initially equipped with the DB 601 A and not the Jumo 213.

Bottom:

Another view of one of the V3's DB 601 A engines during construction of the aircraft.

aimed by periscope. Also one fixed, aft-firing MG 151 with 200 rounds.
Power Plants: 2 X DB 603 using C3 fuel.
Wingspan: 19 m

Wing Area: 41 m²

Gross Weight: 14,000 kg

Fuel: 2,500 kg

Bombload: 2 X 1000 kg

Wing loading at takeoff: 340 kg/m²

Wing loading at landing: 238 kg/m²

Maximum speed without bombs at 7,000 meters:	660 kph
Maximum speed to target at maximum continuous power at 6,000 meters:	550 kph
Maximum speed from target at maximum continuous power at 6,000 meters:	615 kph
Range:2,600 km Cruising speed to target at economical power setting at 6,000 meters:	480 kph
Cruising speed from target at economical power setting at 6,000 meters:	550 kph
Range:	3,000 km
Service ceiling over target with bombs:	9,000 m
Service ceiling over target without bombs:	10,700 m
Landing Speed:	140 kph

Arado Ar 240 D

Multi-purpose combat aircraft with two DB 614. Project only.

Arado Ar 240 E

The previously-mentioned conference minutes from March 17, 1942 also make reference to the Arado Ar 240 E. It wad determined at the conference that the existing fuselage could be used as it was with the exception of some local strengthening. Weight over the target was calculated at 12,800 kg, gross weight 14,000 kg. Cable cutters were to be installed in the outer wings only. Fuel capacity would be 2,400 kg. The arrangement of external wing stores (2 X 500-kg bombs) was approved.

The choice of power plants included the DB 603 G, DB 627 and BMW 801 J.

The Arado Ar 240 E progressed no farther than the project stage.

Arado Ar 240 F

A heavy fighter-bomber variant that also progressed no farther than the planning stage was the Ar 240 F. It was to have been equipped with two DB 603 G engines. Gross weight was reduced to 11,180 kg.

The following planning document for the Ar 240 F provides an indication of how a weight breakdown table was arranged:

Wing:	1270 kg
Undercarriage with hydraulics:	658 kg
Tail unit (surfaces):	138 kg
Tail unit (fuselage):	195 kg
Control system:	203 kg
Brakes:	100 kg
Fuselage less cockpit:	450 kg
Cockpit:	185 kg
Engine gondolas:	412 kg
Airframe:	3612 kg
Engines:	1940 kg
Propellers with de-icers:	518 kg
Cooling system:	278 kg
Fuel tanks:	397 kg
Oil tanks:	57 kg
Oil and coolant in engine:	90 kg
Panels and screws:	281 kg
Cables and rods:	128 kg
Coolant in cooling pipes and tanks:	55 kg
Oil in lines:	20 kg
Attachment points for drop tank:	15 kg
Power Plants:	3779 kg
Free Weight:	34 kg
Structural Weight:	7425 kg
Instruments:	178 kg
Radios:	150 kg
Heating System:	42 kg
Electrical System:	235 kg
General Equipment:	605 kg
2 forward-firing MG 151:	101 kg
2 forward-firing MK 108:	195 kg
1 rearward-firing MG 151:	—
Rearview Mirror:	—
Fixed Armament:	296 kg
Flexible Weapons 4 X MG 131:	282 kg
Bomb-dropping Equipment with Sight:	120 kg
Armor in Cockpit:	168 kg
Armor for Inflatable Raft:	35 kg
Armor for Flexible Weapons:	24 kg
Armor for Power Plants:	200 kg
Total Armor:	427 kg
Equipment:	1730 kg
Equipped Weight:	9155 kg
Fuel:	1300 kg
Oil:	120 kg
Crew:	200 kg
Ammunition 2 X MG 151 = 600 rounds:	120 kg
Ammunition 2 X MK 108 = 200 rounds:	120 kg
Ammunition 1 X MG 151 = 300 rounds:	—
Ammunition 4 X MG 131 = 1800 rounds:	165 kg
Useful Load:	2025 kg
Gross Weight:	11180 kg

Abbreviations	
AGO	Aktien Gesellschaft Otto Flugzeugwerke GmbH
Ar	Arado
Aufkl.Gr.	Aufklärungsgruppe (reconnaissance group)
BAL	RLM Construction Supervisory Body
BMW	Bayerische Motoren Werke
C-Amt	Division of the RLM for Technology and Air Armaments
DB	Daimler Benz
Do	Dornier
DVL	Deutsches Versuchsanstalt für Luftfahrt e.V. (German Aviation Research Institute)
Erpr.Gr.	Erprobungsgruppe (test group)
E-Stelle	Erprobungsstelle (test station)
(F)	Fernaufklärer (long-range reconnaissance aircraft)
FA	Fernsteueranlage (remote-control system)
FDL	fernbetätigte Drehlafette (remotely-controlled barbette)
FT	Funktelegraphie Anlage (radio system)
GM	nitrous-oxide injection
Ob.d.L.	Oberbefehlshaber der Luftwaffe (Commander in Chief of the Luftwaffe)
RLM	Reichsluftfahrtministerium (State Ministry of Aviation)
VDM	Vereinigte Deutsche Metallwerk
VfH	Versuchsstelle für Höhenfluge (High- altitudeResearch Station)
WNr.	Werknummer

THE LUFTWAFFE PROFILE SERIES NO.8 • ARADO Ar 240

· Schiffer Military/Aviation History

9 780887 409233 50000

ISBN: 0-88740-923-7